

कृत्रिम रेशों से निर्मित टायर सूत, डोरी और
टायर डोरी कपड़ा — परीक्षण के तरीके
भाग 6 आर्द्र आकुंचन और आर्द्र आकुंचनीय बल
(दूसरा पुनरीक्षण)

**Tyre Yarns, Cords and Tyre Cord
Fabrics Made from Man-Made
Fibres — Methods of Test
Part 6 Wet Contraction and Wet
Contractile Force
(Second Revision)**

ICS 83.160; 59.060.01

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भारतीय मानक ब्यूरो

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FOREWORD

This Indian Standard (Part 6) (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Technical Textiles for Mobiltech Applications Sectional Committee had been approved by the Textiles Division Council.

This standard was first published in 1969 and subsequently revised in 1989. The second revision has been made in the light of experience gained since its last revision and to incorporate the following major changes:

- a) The title of the standard has been modified; and
- b) The standard pre-tension to test specimen on mounting device has been modified.

This standard has been published in various parts. The other parts under this series are:

- Part 1 Definition of terms
- Part 2 Linear density
- Part 3 Load and elongation characteristics
- Part 4 Dip pick-up
- Part 5 Heat shrinkage and heat shrinkage force
- Part 7 Heat degradation
- Part 8 Thickness
- Part 9 Sampling of tyre yarns, cords and tyre cord fabrics made from rayon
- Part 10 Creep
- Part 11 Commercial mass
- Part 12 Sampling of tyre yarns, cords and tyre fabrics made from polyamide
- Part 13 Static Adhesion of textile tyre cord to vulcanized rubber

The composition of the committee responsible for the formulation of this standard is listed in Annex B.

In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’.

Indian Standard

TYRE YARNS, CORDS AND TYRE CORD FABRICS MADE FROM MAN-MADE FIBRES — METHODS OF TEST

PART 6 WET CONTRACTION AND WET CONTRACTILE FORCE

(Second Revision)

1 SCOPE

This standard (Part 6) prescribes method for determination of wet contraction and wet contractile force developed in rayon and nylon (polyamide) tyre yarns and cords when immersed in water at $(27 \pm 2)^\circ\text{C}$ under a standard pretension of (5 ± 1) mN/tex.

2 REFERENCE

The standards listed in Annex A contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed as in Annex A.

3 SAMPLING

3.1 Samples from the lot shall be drawn so as to be representative of the lot. Sample drawn in accordance with the procedure laid down in the relevant material specification or as agreed to between the buyer and the seller shall be held to be representative of the lot.

4 CONDITIONING OF TEST SAMPLES

4.1 Unless otherwise agreed to between the buyer and the seller, the test sample shall be conditioned to a state of moisture equilibrium from the dry side in standard atmosphere as prescribed in IS 6359.

NOTE — When the test sample under zero tension has been left in such a way as to expose, as far as possible, all portions of it to the standard atmosphere for 24 h, the test sample shall be deemed to have reached a state of moisture equilibrium.

5 APPARATUS

5.1 Mounting Device

The device shall be such that a specimen of at least 250 mm length can be mounted on it with one of its ends in a fixed clamp under desired dead-weight

tension and immersed in water at $(27 \pm 2)^\circ\text{C}$. It shall be provided with means for:

- a) Measuring initial and final lengths of test specimen to an accuracy of 1 mm during immersion, in case of wet contraction test; and
- b) Attaching one clamp to a strain gauge or a mechanical device capable of indicating tension to an accuracy of 1 g without any significant change in the length of the specimen, in the case of wet contractile force test.

6 PROCEDURE

6.1 Mount the conditioned test specimen on the mounting device under a standard pretension of (5 ± 1) mN/tex. Note the original length of test specimen for wet contraction test and initial tension in case of wet contractile force test.

NOTE — In case of tyre cord fabrics, the cords shall be removed from the tyre cord fabrics for testing.

6.2 Immerse the test specimen mounted as above in water at $(27 \pm 2)^\circ\text{C}$ temperature and keep it in this position for 5 minutes. Note the final length or force, as the case may be, while the specimen is still under water.

6.3 Take at least 5 readings.

7 CALCULATIONS

7.1 Calculate the wet contraction and wet contractile force as follows:

a) Wet contraction, percent = $\frac{a-b}{a} \times 100$

where

a = original length of the specimen; and
 b = final length of the specimen.

b) Wet contractile force, mN/tex = $\frac{f_1-f_2}{t}$

where

f_1 = final tension, in mN, developed in the specimen;
 f_2 = initial tension, in mN, in the specimen; and
 t = linear density of the yarn or cord in tex.

information:

- a) Type of material;
- b) Wet contraction and wet contractile force;
- c) Number of tests; and
- d) Temperature used for conditioning the test specimens, that is, $(27 \pm 2)^\circ\text{C}$ or $(20 \pm 2)^\circ\text{C}$.

8 REPORT

8.1 The report shall include the following

ANNEX A (*Clause 2*)

LIST OF REFERRED INDIAN STANDARDS

<i>IS No.</i>	<i>Title</i>
IS 6359 : 1971	Method for conditioning of textiles

ANNEX B
(Foreword)

COMMITTEE COMPOSITION

Technical Textiles for Mobiltech Sectional Committee, TXD 38

<i>Organization</i>	<i>Representative(s)</i>
Northern India Textile Research Association, Ghaziabad	DR M. S. PARMAR (Chairperson)
Arvind Limited, Ahmedabad	SHRI PABITRA SAHOO SHRIMATI MAMTA CHAUDHARY (<i>Alternate</i>)
Autoliv India Ltd, Mysore	SHRI DEEPAK RAO
BMD Pvt Ltd, Banswara	DR NAVDEEP K. PHOGAT
Century Enka Limited, Pune	SHRI MILIND ASHTAPUTRE SHRI KRISHNAGOPAL LANDSARIA (<i>Alternate</i>)
Federation of Indian Chambers of Commerce and Industry, New Delhi	SHRI TUSHAR PATEL SHRI MAHENDRA HADA (<i>Alternate</i>)
Garware Technical Fibres Limited, Pune	DR ABHAY GUPTA
ICAR - Central Institute for Research on Cotton Technology, Mumbai	DR G. KRISHNA PRASAD DR A. ARPUTHARAJ (<i>Alternate</i>)
Indian Technical Textile Association, Mumbai	DR ANUP RAKSHIT SHRI ANKIT DESAI (<i>Alternate</i>)
Kusumgar Corporates Pvt Ltd, Mumbai	SHRI SIDDHARTH Y. KUSUMGAR DR M. K. TALUKDAR (<i>Alternate</i>)
Metro Tyres Ltd, Ludhiana	SHRI SAMIR MAYRA
Northern India Textile Research Association, Ghaziabad	SHRIMATI NEHA KAPIL
Office of the Textile Commissioner, Mumbai	SHRI V. K. KOHLI SHRI HUMAYUN. K. (<i>Alternate</i>)
SGS Limited, Gurugram	SHRI GAURAV SARSWAT SHRI ASHISH SARSWAT (<i>Alternate</i>)
SRF Limited, Gurugram	SHRI ANKUR SHARMA SHRI BHARATH KUMAR (<i>Alternate</i>)
Testtex India Laboratories Pvt Ltd, Mumbai	SHRIMATI MEETA SHINGALA SHRI DIPTI RANJAN PRUSTY (<i>Alternate</i>)
Textiles Committee, Mumbai	SHRI KARTIKAY DHANDA SHRIMATI SHILPI CHAUHAN (<i>Alternate</i>)
The Synthetic and Art Silk Mills Research Association, Mumbai	SHRI SANJAY SAINI SHRI PREMNATH SURWASE (<i>Alternate</i>)
Uniproducts Pvt Ltd, Rewari	SHRI VIKAS YADAV
VOICE, New Delhi	SHRI M. A. U. KHAN SHRI B. K. MUKHOPADHYAY (<i>Alternate</i>)
BIS Directorate General	SHRI J. K. GUPTA, SCIENTIST 'E'/DIRECTOR AND HEAD (TEXTILES) [REPRESENTING DIRECTOR GENERAL (<i>Ex-officio</i>)]

Member Secretary
SHRI BANOTHU RANGA
 SCIENTIST 'B'/ASSISTANT DIRECTOR
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Amendments Issued Since Publication

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